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surfaces and Hilbert modular surfaces*. Preliminary report.

We will describe an explicit birational map between the moduli space of principally polarized abelian surfaces, and a certain 3-dimensional family of elliptic K3 surfaces. As an application, we will describe how to write equations for Hilbert modular surfaces (following Elkies), and give examples of genus 2 curves over  $\mathbb{Q}$  whose Jacobians have real multiplication by the ring of integers of a real quadratic field, such as  $\mathbb{Q}(\sqrt{77})$ . (Received September 03, 2009)